

B. Objectives and Significant Aspects

An Explorer spacecraft equipped with cryogenically cooled instrumentation will provide a uniquely sensitive system for study of diffuse cosmic radiation. It is proposed to develop a mission in which such a system is used to make definitive measurements on the radiative relics of the earliest stages of the universe. Four experiments are proposed, characterized by their common cosmological motivation and by compatible and relatively modest demands upon the spacecraft. The experiments proposed here include:

1. Spectrum of the 2.7 K Cosmic Background from 0.1 to 3 mm
2. Isotropy of the 2.7 K Cosmic Background between 0.5 and 3 mm Wavelength
3. Isotropy of the 2.7 K Cosmic Background at 3, 5, 9, and 16 mm Wavelength
4. Search for Diffuse Cosmic Radiation at 5-30 micron Wavelength.

The personnel responsible for each experiment and principal requirements for each are summarized in Table 1. It should be noted that experiment (3) does not require cryogenic cooling, but it is intimately related to the first two experiments, and does require a satellite platform for high quality results.